

**Notice of Allowability**

Application No.

09/916,689

Examiner

Ishwar (I. B.) Patel

Applicant(s)

HAYASHI ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed on May 4, 2004 and interview summary.
2. ☒ The allowed claim(s) is/are 3,7-9 and 11-14.
3. ☒ The drawings filed on 30 July 2001 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All b) ☐ Some\* c) ☐ None of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                              |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date <u>0604</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment                                      |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance                     |
|   | 9. <input type="checkbox"/> Other _____.   |

### EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Abraham J. Rosner (Reg. 33,276) on June 21, 2004.

The application has been amended as follows:

(a) Amend claims 3, 11 and 12 as below.

3. (currently amended): A printed wiring substrate comprising:  
a ~~core substrate~~ having a front surface and a back surface;  
an ~~electronic~~ component embedded in said core substrate,  
said electronic component having an electrode having a height projecting from at least an upper end thereof;  
a dielectric layer covering the front surface of the core substrate;  
~~terminal electrodes for mounting a semiconductor element on the front surface of the~~  
~~printed wiring substrate; and~~  
via holes penetrating the ~~insulating dielectric~~ layer and connecting at least one of the terminal electrodes to the electrode of the electronic component,  
wherein said core substrate or a resin embedding the electronic component in the core substrate contains an inorganic filler, said inorganic filler having a particle size not greater than one-half the height of said electrode.

11. (currently amended): A method for manufacturing a printed wiring substrate comprising a core substrate having a front surface and a back surface;

an electronic component embedded in said core substrate via a resin in a through-hole extending through said core substrate between the front surface and the back surface of the core substrate,

said electronic component having an electrode having a height projecting from at least an upper end thereof;

a dielectric layer covering the front surface of the core substrate;

terminal electrodes for mounting a semiconductor element on the front surface of the printed wiring substrate; and

via conductors penetrating the ~~insulating dielectric~~ layer and connecting at least one of the terminal electrodes to the electrode of the electronic component,

wherein said resin embedding the electronic component in the core substrate contains an inorganic filler, said inorganic filler having a particle size of not greater than one-half the height of said electrode.

said method comprising the steps of:

inserting into the through-hole the electronic component having an electrode projecting from at least an upper end thereof;

embedding the electronic component in the through hole by means of a resin containing an inorganic filler; and

polishing a surface of the resin so as to expose an end surface of the electrode.

12. (currently amended): A method for manufacturing a printed wiring substrate comprising a core substrate having a front surface and a back surface;

an electronic component embedded in said core substrate via a resin in a recess formed in said core substrate and extending from an interior of said core substrate to the front surface or back surface of the core substrate,

said electronic component having an electrode having a height projecting from at least an upper end thereof;

a dielectric layer covering the front surface of the core substrate;

terminal electrodes for mounting a semiconductor element on the front surface of the printed wiring substrate; and

via conductors penetrating the ~~insulating dielectric~~ layer and connecting at least one of the terminal electrodes to the electrode of the electronic component,

wherein ~~said resin embedding the electric component in the core substrate contains an inorganic filler, said inorganic filler having a particle size of not greater than one-half the height of said electrode,~~

said method comprising the steps of:

inserting into the through-hole or the recess the electronic component having an electrode projecting from at least an upper end thereof;

embedding the electronic component in the recess by means of a resin containing an inorganic filler; and

polishing a surface of the resin so as to expose an end surface of the electrode.

(b) Cancel claims 4-6 and 10.

2. The following is an examiner's statement of reasons for allowance: The claimed invention discloses a printed wiring substrate comprising a core substrate with an electronic component embedded in said core substrate, said electronic component having an electrode with a height projecting from at least an upper end thereof, wherein said core substrate or a resin embedding the electronic component in the core substrate contain an inorganic filler, said inorganic filler having a particle size not greater than one-half the height of said electrode.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

3. Claims 8, 11, 12 and 14, previously withdrawn from consideration as a result of a restriction requirement, are rejoined and fully examined for patentability, as they include all the limitations of the allowed claim 3.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar (I. B.) Patel whose telephone number is (571) 272 1933. The examiner can normally be reached on M-F (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (571) 272 1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

I B Patel  
Examiner  
GAU: 2827  
June 24, 2004



**EVAN PERT**  
**PRIMARY EXAMINER**